Reference Guide
CIM Agent

QLogic 3000/5000/9000 Series Fibre Channel Switch

QLogic Intelligent Pass-thru Module for IBM BladeCenter
QLogic 20-Port SAN Switch Module for IBM BladeCenter
QLogic Virtual Fabric Extension Module for IBM BladeCenter

Firmware Version 7.*x*, 8.*x*, 9.*x*

59223-03 E

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This product is covered by one or more of the following patents: 6697359; other patents pending.

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Changes	Pages Affected
Updated for switch firmware version 8.*x*, 9.*x*	Throughout
Updated for format and branding	Throughout
Corrected CIM_FCSwitch to CIM_ComputerSystem	A-5
Corrected CIM_MemberOfStatisticsCollection to QLGC_MemberOfStatisticsCollection	1-3
Corrected CIM_CIMIndicationFilter to CIM_IndicationFilter	5-2

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Preface

This guide describes how the Common Interface Model (CIM) Agent functions as an implementation of the Storage Management Initiative (SMI)-Specification 1.1. This manual provides the supported classes and associations, including custom and overridden properties and methods. It also lists the capabilities and limitations of the CIMAgent at the HTTP, XML, and CIM protocol levels.

Client Considerations

The CIM Agent is embedded in the Fibre Channel switch firmware, and so changing the firmware may change the CIMAgent implementation, or if changing to a firmware revision prior to 5.0 the CIMAgent may not be supported.

The CIMAgent is able to discover Fabric Profile information about other switches in the fabric using standard Management Server calls. It is NOT able to manage, or discover Switch Profile information about other switches in the fabric. A client will need to contact every CIMAgent in the fabric to retrieve Switch Profile information. An Ethernet connection to the switch is required to contact the CIMAgent.

Switch and fabric objects are frequently identified using unique but opaque values. It is possible for these opaque identifiers to change as a result of changes to the fabric. For instance, if an HBA that was connected to switch port 1 is re-connected to switch port 2, the opaque FCPort.DeviceID property may change even though the object represents the same exact port on an HBA. A client should use durable identifiers to manage physical devices in the fabric.

The Secure Socket Layer (SSL) capability is not supported on all QLogic switch models. Where it is supported, SSL is an option that may be enabled or disabled. If SSL is enabled, a client must connect using the HTTPS protocol, and if it is disabled, a client must connect using the HTTP protocol.

The CIMAgent is the primary focus of this manual which is organized as follows:

- This preface describes the intended audience for this manual, related materials, and technical support.
- Section 1 describes how to use Switch Management and its classes.
- Section 2 describes how to use Fabric Discovery.
- Section 3 describes how to use Fabric Zoning.
- Section 4 describes how to use Server Support.
- Section 5 describes how to use Indication Support.

An appendix and index are also provided.

Intended Audience

The primary audience for this document is software developers building a management client for QLogic switches. The reader is expected to be familiar with the SMI-Specification (rev 1.1) and have access to the referenced DMTF MOF files. A secondary audience may use this document as a reference to the CIMAgent capabilities.

Related Materials

Refer to the following manuals for information about switch hardware and installation.

- *SNIA, Storage Management Initiative Specification*, version 1.1.0
- *DMTF, CIM Specification*, version 2.3
- *DMTF, CIM Operations over HTTP*, v1.2, DSP0200
- *DMTF, Representation of CIM in XML*, v2.2, DSP0201
- *DMTF, CIM Schema* 2.10
- *Network Working Group, Service Location Protocol*, version 2, RFC 2608
- QLogic Fibre Channel Switch Management User Guides

Documentation Conventions

This guide uses the following documentation conventions:

- **NOTE:** provides additional information.
- ***CAUTION!*** indicates the presence of a hazard that has the potential of causing damage to data or equipment.
- ***WARNING!!*** indicates the presence of a hazard that has the potential of causing personal injury.
- Text in blue font indicates a hyperlink (jump) to a figure, table, or section in this guide, and links to Web sites are shown in underlined blue. For example:
  - Table 9-2 lists problems related to the user interface and remote agent.
  - See "Installation Checklist" on page 3-6.
  - For more information, visit www.qlogic.com.
- Text in **bold** font indicates user interface elements such as a menu items, buttons, check boxes, or column headings. For example:
  - Click the **Start** button, point to **Programs**, point to **Accessories**, and then click **Command Prompt**.
  - Under **Notification Options**, select the **Warning Alarms** check box.
- Text in `Courier` font indicates a file name, directory path, or command line text. For example:
  - To return to the root directory from anywhere in the file structure: Type `cd /root` and press ENTER.
  - Enter the following command: `sh ./install.bin`
- Key names and key strokes are indicated with UPPERCASE:
  - Press CTRL+P.
  - Press the UP ARROW key.

- Text in *italics* indicates terms, emphasis, variables, or document titles. For example:
  - For a complete listing of license agreements, refer to the *QLogic Software End User License Agreement*.
  - What are *shortcut keys*?
  - To enter the date type *mm/dd/yyyy* (where *mm* is the month, *dd* is the day, and *yyyy* is the year).
- Topic titles between quotation marks identify related topics either within this manual or in the online help, which is also referred to as *the help system* throughout this document.

Supported Profiles and SubProfiles

- Switch Profile
  - Switch Configuration Data
  - Access Points
  - Location
  - Physical Package
  - Software Package
- Fabric Profile
  - Zone Control
  - Enhanced Zoning
- Server Profile
  - Indications

Technical Support

Customers should contact their authorized maintenance provider for technical support of their QLogic products. QLogic-direct customers may contact QLogic Technical Support; others will be redirected to their authorized maintenance provider. Visit the QLogic support Web site listed in Contact Information for the latest firmware and software updates.

For details about available service plans, or for information about renewing and extending your service, visit the Service Program web page at http://www.qlogic.com/services.

Training

QLogic offers training for technical professionals for all iSCSI, InfiniBand, and Fibre Channel products. From the main QLogic web page at www.qlogic.com, click the **Support** tab at the top, and then click **Training and Certification** on the left. The QLogic Global Training portal offers online courses, certification exams, and scheduling of in-person training.

Technical Certification courses include installation, maintenance and troubleshooting QLogic products. Upon demonstrating knowledge using live equipment, QLogic awards a certificate identifying the student as a certified professional. You can reach the training professionals at QLogic by e-mail at training@qlogic.com.

Contact Information

QLogic Technical Support for products under warranty is available during local standard working hours excluding QLogic Observed Holidays. For customers with extended service, consult your plan for available hours. For Support phone numbers, see the Contact Support link at support.qlogic.com.

Support Headquarters	QLogic Corporation 4601 Dean Lakes Blvd. Shakopee, MN 55379 USA
QLogic Web Site	www.qlogic.com
Technical Support Web Site	http://support.qlogic.com
Technical Support E-mail	support@qlogic.com
Technical Training E-mail	training@qlogic.com

Knowledge Base

The QLogic knowledge base is an extensive collection of QLogic product information that you can search for specific solutions. We are constantly adding to the collection of information in our knowledge base to provide answers to your most urgent questions. Access the knowledge base from the QLogic Support Center: http://support.qlogic.com.

1 Switch Management Classes

The following classes are exclusive to the switch that is hosting the CIMAgent, and are described in the SMI-Specification 1.1 Switch profile. Classes that are common to both the Switch and the Fabric profiles are described in the Fabric Discovery section of this document.

QLGC_FCPortStatistics: CIM_FCPortStatistics

There will be an instance of FCPortStatistics for every port on the switch. All counter values are relative to the last switch reset (of any type) or the last port counter reset.

Supported Properties and Methods

InstanceID

Opaque

ElementName

Property will contain the string “FC Port Statistics”

LIPCount

Property will contain the total number of Loop Initialization Primitives sequences received by the port.

LinkResetsReceived

Property will contain the number of Link Reset primitive sequences received by the port.

LinkResetsTransmitted

Property will contain the number of Link Reset primitive sequences transmitted by the port.

PrimitiveSeqProtocolErrCount

Property will contain the number of Primitive Sequence Protocol Errors detected by the port.

AddressErrors

Property will contain the number of frame address ID errors detected by the port.

RXClass3Frames
Property will contain the number of class3 FC frames received by the port.

TXClass3Frames
Property will contain the number of class 3 frames transmitted by the port.

RXClass2Frames
Property will contain the number of class2 frames received by the port.

TXClass2Frames
Property will contain the number of class2 frames transmitted by the port.

InvalidTransmissionWords
Property will contain the number of 8b10b decode errors received by the port.

LinkFailures
Property will contain the number of times an optical link error has occurred.

LossOfSyncCounter
Property will contain the number of times that synchronization has been lost on the port.

CRCErrors
Property will contain the number of times that the CRC in a frame does not match the CRC computed by the receiver.

BytesReceived
Property will contain the total number of bytes received by the port.

BytesTransmitted
Property will contain the total number of bytes transmitted from the port.

PacketsReceived
Property will contain the number of FC frames received by the port.

PacketsTransmitted
Property will contain the number of FC frames transmitted by the port.

ResetSelectedStats()

Reset ALL the counters for the port to zero.

Parameters:
SelectedStatistics: [required] Must be [“ALL”] or [“All”]

Returns:

- 0 - Success
- 1 - Not Supported
- 5 - Invalid Parameter: Invalid SelectedStatistics parameter, not in [“ALL”|”All”].
- 6 - Access Denied: Switch is being configured by another user.

Request Status Codes:

- CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.
- CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.
- CIM_ERR_NOT_FOUND: The FCPortStatistics instance was not found.
- CIM_ERR_FAILED: Unexpected Error

Associations

- QLGC_FCPortStatisticalData : CIM_ElementStatisticalData — 1to1 relationship to QLGC_FCPort
- QLGC_MemberOfStatisticsCollection : CIM_MemberOfCollection— Manyto1 relationship to QLGC_StatisticsCollection

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames
- invokeMethod

QLGC_FCPortRateStatistics : CIM_FCPortRateStatistics

There will be an instance of FCPortRateStatistics for every port on the switch. All rate values will be NULL until the first full sample interval after a counter reset has completed. Rates are calculated by sampling counters at regular intervals. Polling for RateStatistics more than once per interval will result in duplicate rate values.

Supported Properties and Methods

InstanceID

Opaque

StatisticTime

Property will contain the time that the most recent sample measurement was taken.

[Will contain the switch time rounded down to the nearest second]

SampleInterval

Property will contain the sample interval used to calculate the rate values. The interval is 1 second.

RxFrameRate

Property will contain the frames received per second calculated for the preceding sample interval.

TxFrameRate

Property will contain the frames transmitted per second calculated for the preceding sample interval.

RxRate

Property will contain the bytes received per second calculated for the preceding sample interval.

TxRate

Property will contain the bytes transmitted per second calculated for the preceding sample interval.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FCPortRateStatisticalData : CIM_ElementStatisticalData — 1to1 relationship to QLGC_FCPort

QLGC_StatisticsCollection : CIM_StatisticsCollection

The model will contain a single StatisticsCollection which may be used to retrieve all port statistics for the switch hosting the CIMAgent in a single Associators() call.

Supported Properties and Methods

InstanceID

Opaque

ElementName

Property will contain the string “FC Switch Statistics Collection”

SampleInterval

Property will contain the minimum sample interval for all port statistics. It will always be 1 second.

TimeLastSampled

Property will contain the time on the switch rounded to the nearest second.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FCSwitchStatisticsCollection : CIM_HostedCollection — 1to1 relationship to QLGC_FCSwitch
- QLGC_MemberOfStatisticsCollection: CIM_MemberOfCollection — 1toMany relationship to QLGC_FCPortStatistics

QLGC_PhysicalIOBlade : CIM_PhysicalPackage

If the switch hosting the CIMAgent contains multiple IO blades, each installed blade will be represented by an instance of QLGC_PhysicalBlade. An IO blade hosts externally addressable FC ports.

Supported Properties and Methods

CreationClassName

Property will contain the string “QLGC_PhysicalIOBlade”

Tag

Opaque identifier

Manufacturer

If the switch is re-branded, this property will contain the name of the branding vendor, otherwise it will default to “QLogic Corporation”.

Model

Property will contain the FRU Type mnemonic identifying the IO blade.

PartNumber

Property will contain a string that matches the planar part number printed on blade.

PackageType

Property will contain the enumerated value 16=Blade.

SerialNumber

Property will contain a string that matches the serial number printed on the blade.

CanBeFRUed

Boolean Property will contain TRUE if the I/O blade is field replaceable.

RemovalConditions

Property will contain one of the following enumerated values:

- 3 Off: Switch must be Off before removal.
- 4 On or Off: Blade is hot-swappable.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FCSwitchPhysicalIOBlade : CIM_ComputerSystemPackage — Manyto1 relationship to QLGC_FCSwitch
- QLGC_RealizesLogicalIOBlade : CIM_Realizes — 1to1 relationship to QLGC_LogicalIOBlade
- QLGC_PhysicalIOBladeContainer : CIM_Container — Manyto1 relationship to QLGC_PhysicalChassis

QLGC_PhysicalChassis : CIM_PhysicalPackage

The embedded CIMAgent will report a single physical chassis instance representing the framework on which the hosting switch components are mounted.

Supported Properties and Methods

CreationClassName

Property will contain the string “QLGC_PhysicalChassis”

Tag

Opaque identifier

Manufacturer

If the switch is re-branded, this property will contain the name of the branding vendor, otherwise it will default to “QLogic Corporation”.

Model

Property will contain the model number printed on the switch chassis.

PartNumber

Property will contain a string that matches the part number printed on the switch chassis.

PackageType

Property will contain the enumerated value 3 = Chassis.

SerialNumber

Property will contain a string that matches the serial number printed on the switch chassis.

RemovalConditions

Property will contain the enumerated value 2=NotApplicable.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FCSwitchPackage : CIM_ComputerSystemPackage — 1to1 relationship to QLGC_FCSwitch
- QLGC_ProductPhysicalChassis: CIM_ProductPhysicalComponent — 1to1 relationship to QLGC_Product
- QLGC_PhysicalIOBladeContainer : CIM_Container — Manyto1 relationship to QLGC_PhysicalIOBlade

QLGC_Product : CIM_Product

Product models the combination of hardware and software that make up the Switch. The embedded CIMAgent will report a single product instance representing the switch hosting the agent.

Supported Properties and Methods

IdentifyingNumber

Property will contain the switch serial number as printed on the chassis.

Name

Property will contain the commonly known name of the product. For re-branded switches, this will be the vendor assigned product name.

Vendor

Property will contain the string “QLogic Corporation” unless the switch has been re branded, in which case it will contain the name of the branding vendor.

Version

Property will contain the value “0”.

ElementName

Property will contain the commonly known name of the product. For re-branded switches, this will be the vendor assigned product name. This property matches the SNMP System Description.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_ProductPhysicalChassis: CIM_ProductPhysicalComponent — 1to1 relationship to QLGC_PhysicalChassis

QLGC_SoftwareIdentity : CIM_SoftwareIdentity

Software Identity is used here to identify the firmware revision on the switch. The CIMAgent only reports firmware information for its hosting switch. Only the active firmware version is reported.

Supported Properties and Methods

InstanceID

Opaque Identifier

Manufacturer

If the switch is re-branded, this property will contain the name of the branding vendor, otherwise it will default to QLogic Corporation.

VersionString

Property will contain the version number of the active firmware. Note: the active firmware may differ from the installed firmware if a new image is uploaded but the switch has not been reset.

MajorVersion

Property will contain the major firmware version from the version string. Using version format Va.b.c.d-e, major version will be the value at position “a”.

MinorVersion

Property will contain the minor firmware version from the version string. Using version format Va.b.c.d-e, minor version will be the value at position “b”.

RevisionNumber

Property will contain the firmware revision from the version string. Using version format Va.b.c.d-e, revision will be the value at position “d”.

BuildNumber

Property will contain the firmware build number from the version string. Using the version Va.b.c.d-e, build number will be the value at position “e”.

Classifications

Property will contain an array made up of the single enumerated value 10-Firmware.

Name

Property will contain the string “Firmware”

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FCSwitchSoftware : CIM_InstalledSoftwareIdentity — 1to1 relationship to QLGC_FCSwitch
- QLGC_ProfileElementSoftwareIdentity : CIM_ElementSoftwareIdentity — 1toMany relationship to all instances of QLGC_RegisteredProfile
- QLGC_SubProfileElementSoftwareIdentity : CIM_ElementSoftwareIdentity — 1toMany relationship to all instances of QLGC_RegisteredSubProfile

QLGC_Location : CIM_Location

Location is used to note the physical location of the switch. The embedded CIMAgent will report a single Location instance locating the switch hosting the agent.

Supported Properties and Methods

Name

Property will contain the label “FC Mgmt MIB - connUnitLocation”

Physical Position

Property will contain a free-form string describing the physical location of the switch.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_PhysicalElementLocation : CIM_PhysicalElementLocation — 1to1 relationship to QLGC_PhysicalChassis

QLGC_FCPortCapabilities : CIM_FCPortCapabilities

There will be an instance of FCPortCapabilities for every port on the switch hosting the CIMAgent. This class is used to determine the configuration options for an FCPort. Port capabilities will vary by port, and may change for a given port as a result of hardware or license changes.

Supported Properties and Methods

InstanceID

Opaque Identifier

ElementName

Property will contain the string “FC Port Capabilities”

ElementNameEditSupported

Property will contain a boolean value that will be TRUE if the FCPort.ElementName property may be modified, or FALSE if the property is read-only.

MaxElementNameLen

Property will contain the maximum string length of the FCPort.ElementName property.

RequestedStatesSupported

Property will contain an array of one or more acceptable values for the FCPort.RequestStateChange method.

Possible values are:

- 2-Enabled: Port is online.
- 3-Disabled: Port is offline
- 7-Test: Port is in diagnostics mode.

RequestedSpeedsSupported

Property will contain an array of one or more acceptable values for the FCPortConfig.RequestedSpeed property.

Possible values are:

- 1062500000: 1Gbps
- 2125000000: 2Gbps
- 4250000000: 4Gbps
- 12750000000: 10Gbps (4channel)
- 8500000000: 8Gbps
- 25500000000: 20Gbps

Port speed configuration is not affected by GBIC capabilities. That is, a 4-Gbps port may be configured to 4-Gbps even if a -2Gbps GBIC is installed.

AutoSenseSpeedConfigurable

Property will contain a boolean value that will be TRUE if the FCPortConfig.AutoSenseSpeed property may be configured, or FALSE if the property is read-only.

RequestedTypesSupported

Property will contain an array of one or more acceptable values for the FCPortConfig.RequestedType property.

Possible values are:

- 2-G: Port may act as an E or F port.
- 3-GL: Port may act as an E, F, or FL port.
- 5-F: Port may only act as an F port.
- 6-FX: Port may act as an F or FL port.
- 16000-Donor: Port may not connect, it donates its credits for use by another port.

QLogic Extended Properties and Methods

SupportedIOStreamGuardStates

Property will contain an array of acceptable values for the FCPortSettings.IOStreamGuard property.

Possible values are:

- 1 – AutoSense: Port will enable IOStreamGuard if connected to an Initiator.
- 2 – Enable: Suppresses the reception of RSCN messages from other ports for which I/O Stream Guard is enabled.
- 3 – Disable: Allows free transmission and reception of RSCN messages.

SupportedPerformanceTuningModes

Property will contain an array of acceptable values for the FCPortSettings.PerformanceTuningMode property. If the array contains fewer than 2 entries, the mode is not configurable. Supported values are:

- 1 – AutoSense
- 2 – None
- 3 – MFS: Multi-frame sequence interleaving is suppressed.
- 4 – VI: Enable support for VI frames.
- 5 – LCF: Preference routing for link control frames.
- 6 – VI-LCF: Enable both VI and LCF

DeviceScanConfigurable

Property will contain a boolean value that will be TRUE when the FCPortSettings.DeviceScan property may be edited, or FALSE if the property is read-only.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

QLGC_FCPortElementCapabilities : CIM_ElementCapabilities
1to1 relationship to QLGC_FCPort

QLGC_FCPortSettings : CIM_FCPortSettings

There will be an instance of FCPortSettings for every port on the switch hosting the CIMAgent. This class is used to change the port configuration used on reset and startup. Changing the configuration also causes the current port settings to be set to the new configured value.

Supported Properties and Methods

InstanceID

Opaque Identifier

ElementName

Property will contain the string “FC Port Settings”

RequestedSpeed

Property will contain the configured port speed. This value will be ignored if the AutoSenseSpeed property is TRUE. The active port speed is reported in the FCPort.Speed property. Valid values are reported by the RequestedSpeedsSupported property of the corresponding FCPortCapabilities instance.

Possible values are:

- 1062500000: 1Gb
- 2125000000: 2Gb
- 4250000000: 4Gb
- 12750000000: 10Gb (4channel)
- 8500000000: 8Gbps
- 25500000000: 20Gbps

If AutoSenseSpeed is set to TRUE, then changes to this property will be ignored. As a result, the AutoSenseSpeed property should be disabled BEFORE the RequestedSpeed property is changed, or they should both be changed at the same time.

AutoSenseSpeed

Property will contain a boolean value indicating if the port is configured to AutoSense the speed. This property overrides the RequestedSpeed property. The active port speed is reported in the FCPort.Speed property. This property may be edited if the value of the EditAutoSenseSpeed property of the corresponding FCPortCapabilities instance is TRUE.

RequestedType

Property will contain the configured port type. The active port type is reported in the FCPort.PortType property. Valid values for this property are reported by the RequestedTypesSupported property of the corresponding FCPortCapabilities instance.

Possible values are:

- 2-G: Port may act as an E or F port.
- 3-GL: Port may act as an E, F, or FL port.
- 5-F: Port may only act as an F port.
- 6-FX: Port may act as an F or FL port.
- 16000-Donor: Port may not connect, it donates its credits for use by another port.

QLogic Extended Properties and Methods

RequestedIOStreamGuardState

Property will contain the configured IOStreamGuard state. The operational IOStreamGuard state is reported by the FCPort.IOStreamGuard property. Valid values for this property are reported by the SupportedIOStreamGuardStates property of the corresponding FCPortCapabilities instance. IOStreamGuard should only be enabled for ports that are connected to initiators.

Possible values are:

- 1 – AutoSense: Port will enable IOStreamGuard if connected to an Initiator.
- 2 – Enable: Suppresses the reception of RSCN messages from other ports for which I/O Stream Guard is enabled.
- 3 – Disable: Allows free transmission and reception of RSCN messages.

RequestedPerformanceTuningMode

Property will contain the configured Performance Tuning mode. The operational Performance Tuning mode is reported by FCPort.PerformanceTuning property. Valid values for this property are reported by the SupportedPerformanceTuningModes property of the corresponding FCPortCapabilities instance.

Supported values are:

- 1 – AutoSense
- 2 – None
- 3 – MFS: Multi-frame sequence interleaving is suppressed.
- 4 – VI: Enable support for VI frames.
- 5 – LCF: Preference routing for link control frames.
- 6 – VI-LCF: Enable both VI and LCF

DeviceScanEnable

Property will contain a boolean value indicating that the DeviceScan feature is enabled. The Device Scan feature queries the connected device during login for FC-4 descriptor information. Disable this property only if the scan creates a conflict with the connected device. This property may be edited if the DeviceScanConfigurable property of the corresponding FCPort instance is TRUE.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames
- modifyInstance
- setProperty

Associations

QLGC_FCPortElementCapabilities : CIM_ElementCapabilities — 1to1 relationship to QLGC_FCPort

QLGC_FCSwitchCapabilities : CIM_EnabledLogicalElementCapabilities

There will be one instance of FCSwitchCapapilities representing the configuration capabilities of the switch hosting the CIMAgent. Switch capabilities may change over time as a result of hardware or license, or operating mode changes.

Supported Properties and Methods

InstanceID

Opaque Identifier

ElementName

Property will contain the string “FC Switch Capabilities”

ElementNameEditSupported

Property will contain a boolean value that will be TRUE if the FCSwitch.ElementName property may be modified, or FALSE if the property is read-only.

MaxElementNameLen

Property will contain the maximum string length of the FCSwitch.ElementName property.

RequestedStatesSupported

Property will contain an array of acceptable values for the FCPort.RequestStateChange method.

Possible values are:

- 2-Enabled: All ports are online.
- 3-Disabled: All ports are offline
- 7-Test: All ports are in diagnostics mode.
- 11-Reset: Reset the Switch

DomainIDConfigureable

Property will contain a boolean value that will be TRUE then the CIM_FCSwitchSettings.PreferredDomainID property may be edited, or FALSE if the property is read-only.

MinDomainID

Property will contain the minimum DomainID value supported by the switch. The CIM_FCSwitchSettings.PreferredDomainID may not be less than this value.

MaxDomainID

Property will contain the maximum DomainID value (254) supported by the switch. The CIM_FCSwitchSettings.PreferredDomainID may not be greater than this value.

DomainIDLockedSupported

Property will contain a boolean value that will be TRUE then the CIM_FCSwitchSettings.DomainIDLocked property may be edited, or FALSE if the property is read-only.

PrincipalPrioritiesSupported

Property will contain an array of one or more acceptable values for the CIM_FCSwitchSettings.PrincipalPriority property.

Possible values are:

- 2-Principal: (FC-SW2)Switch_Priority=1
- 3-Subordinate: (FC-SW2)Switch_Priority=255
- 4-Any: (FC-SW2)Switch_Priority=254
- All Switches: Value will be [2,3,4]

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

QLGC_FCSwitchElementCapabilities : CIM_ElementCapabilities — 1to1 relationship to QLGC_FCSwitch

QLGC_FCSwitchSettings : CIM_FCSwitchSettings

There will be one instance of FCSwitchCapabilities representing the configuration of the switch hosting the CIMAgent.

Supported Properties and Methods

InstanceID

Opaque Identifier

ElementName

Property will contain the string “FC Switch Settings”

PreferredDomainID

Property will contain the configured domainID. The configured domainID will match the Active domainID if the value of DomainIDLocked property is TRUE. This property may be edited if the value of the related FCSwitchCapabilities.EditPreferredDomainID property is TRUE. The value must be within the range expressed by the FCSwitchCapabilities.MinDomainID and FCSwitchCapabilities.MaxDomainID.

DomainIDLocked

Property will contain the configured DomainIDLocked setting. If TRUE, the switch MUST use the PreferredDomainID, and domainID conflicts within a fabric are resolved by segmenting the fabric. If FALSE, the switch will use the preferred domainID where possible, and fail over to an available domainID in the event of a domainID conflict. This property may be edited if the value of FCSwitchCapabilities.EditDomainIDLocked property is TRUE.

PrincipalPriority

Property will contain an enumerated principal priority configuration for the switch. Valid values for this property are reported by the PrincipalPrioritiesSupported property of the corresponding FCSwitchCapabilities instance.

Possible values are:

- 2-Principal: (FC-SW2)Switch_Priority=1
- 3-Subordinate: (FC-SW2)Switch_Priority=255
- 4-Any: (FC-SW2)Switch_Priority=254

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames
- modifyInstance
- setProperty

Associations

- QLGC_FCSwitchElementSettingData : CIM_ElementSettingData — 1to1 relationship to QLGC_FCSwitch

QLGC_LogicalIOBlade : CIM_LogicalIOBlade

QLGC_LogicalIOBlade is a logical representation of an IO blade on the switch. Blade information is only available for the switch hosting the CIMAgent.

Supported Properties and Methods

CreationClassName

Property will contain the string “QLGC_LogicalIOBlade”

DeviceID

Opaque identifier

SystemCreationClassName

Property will contain the string “QLGC_FCSwitch”

SystemName

Property will contain the switch WWN

ElementName

Property will contain a user friendly mnemonic identifying the blade type and index.

OperationalStatus

Operational Status represents the operational status of the blade and is the result of POST as well as real-time diagnostics. This property will be an array containing one of the following enumerated status values:

- 00-Unknown: Status information is not available.
- 02-OK: Blade is OK.
- 03-Degraded: Blade has a diagnostic error.
- 06-Error: Blade has a diagnostic error. Service immediately.

And optionally, one of the following enumerated state values.

- 08-Starting: Blade has been inserted, or enabled.
- 09-Stopping: Blade has been turned off, and is shutting down.
- 10-Stopped: Blade has been turned off (presumably for removal).
- 15-Dormant: Blade has been disabled.
- 11-InService: The Blade is in diagnostic mode

A healthy blade working normally will report the array [02] for this property.

HealthState

This property will report the diagnostic status of the blade as a result of the Switch POST. Supported values are:

0 – Unknown Blade is not installed

5 – OK No errors

10 – Degraded Blade operation is compromised.

25 – Critical Failure Blade failed POST

ModuleNumber

Property will contain the zero based blade index. A blade is uniquely identified by the combination of the Blade Type and the blade (Module) number.

LogicalModuleType

Property will contain the enumerated value 4=Blade.

EnabledState

Property will contain the current blade enabled state.

- 02-Enabled: Blade is enabled
- 03-Disabled: Blade is disabled (all ports disabled)
- 07-InTest: Port is in diagnostic mode

RequestedState

Property will contain the value 5=No Change. All blade state changes are atomic, so there will never be a pending requested state.

EnabledDefault

Property will contain the configured blade state.

- 02-Enabled: Blade is enabled
- 03-Disabled: Blade is disabled

RequestStateChange

Method will change the configured blade state to the RequestedState value. If the RequestedState parameter is 11-Reset, the blade will be reset, but the configured state will not change.

Parameters:

- RequestedState [required] Parameter must be one of the following enumerated values.
  - 2-Enabled: Blade is online.
  - 3-Disabled: Blade is offline
  - 7-Test: Blade is in diagnostics mode.
  - 11-Reset: Blade will be reset.
  - 32768-PoweredOff: Blade will be powered off, and the CIMAgent will no longer report the blade object until is it powered on again (or re-inserted).
- Job Ignored, command is synchronous.
- TimeoutPeriod, must be zero second interval, or NULL, command is synchronous.

Method Returns:

- 0 - Success
- 6 - In Use: Switch is being configured by another user.
- 4097 - Invalid State: Transition
- RequestedState: parameter value is out of range, or currently not supported by the blade.
- 4098 – Use of Timeout Parameter Not Supported

Request Status Codes:

- CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.
- CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.
- CIM_ERR_NOT_FOUND: The LogicalModule instance was not found.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_LogicalIOBladeFCPort : CIM_ModulePort — 1toMany relationship to QLGC_FCPort
- QLGC_RealizesLogicalIOBlade : CIM_Realizes — 1to1 relationship to QLGC_PhysicalIOBlade
- QLGC_FCSwitchLogicalIOBlade : CIM_SystemDevice — 1to1 relationship to the local QLGC_FCSwitch instance.

QLGC_RemoteServiceAccessPoint : CIM_RemoteServiceAccessPoint

RemoteServiceAccessPoint is used by the access points sub-profile to expose connectivity information for services and interfaces on the switch. There may be as many as 10 instances of RemoteServiceAccessPoint depending on which services are enabled on the switch.

Supported Properties and Methods

CreationClassName

Property will contain the string “QLGC_RemoteServiceAccessPoint”

Name

Property will contain a fixed string based on the type of service and protocol.

- _ServiceType Name Value_
- snmp “SNMP Interface”
- snmp “IPV6 SNMP Interface”
- telnet “Telnet Interface”
- telnet “IPV6 Telnet Interface”
- ssh “SSH Interface”
- ssh “IPV6 SSH Interface”
- EmbeddedGUI “Web User Interface”
- EmbeddedGUI “IPV6 Web User Interface”
- ethernet “Ethernet Port IP Address”
- ethernet “IPV6 Ethernet Port IP Address”

SystemCreationClassName

Property will contain the string “QLGC_FCSwitch”

SystemName

Property will contain the switch WWN

AccessInfo

Property will contain the a string value using standard URI syntax, except for the ethernet interface which is simply the ipaddr.

ServiceType and Value

- snmp: snmp://<communityname@<ipaddr> for SNMPv1 & SNMPv2
- snmp://<ipaddr> for SNMPv3
- telnet: telnet://<ipaddr>
- ssh: ssh://<ipaddr>
- EmbeddedGUI: http://<ipaddr>
- ethernet: <ipaddr>

Where:

- ipaddr = Only the preferred IPv4 and IPv6 address for each service will be returned for each service type. IPv4 addresses will be in dot-decimal notation. IPv6 addresses will be in IPv6 text notation (rfc2373), however if it is part of a URL, it will be enclosed in square brackets (rfc2732).
- Communityname = The SNMPv2 community name string used to authenticate the client.

ElementName

Property will contain the string value “Access Point”

InfoFormat

Property will contain an enumerated value describing the format of the AccessInfo property.

ServiceType and Value:

- snmp: 200-URL
- telnet: 200-URL
- ssh: 200-URL
- EmbeddedGUI: 200-URL
- ethernet: 3-IPv4 Address or 4-IPv6 Address

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames
- invokeMethod

Associations

- QLGC_FCSwitchAccessPoint : CIM_HostedAccessPoint — Manyto1 relationship to QLGC_FCSwitch
- QLGC_SAPAvailableForFCSwitch : CIM_SAPAvailableForElement — Manyto1 relationship to QLGC_FCSwitch

CIM_ConfigurationData : CIM_SettingData

This class is used to retrieve and restore the current switch configuration image. The configuration image includes the local zoning database and all switch configuration settings.

There will always be at least one instance of the CIM_ConfigurationData class that represents the current switch configuration. If a client has uploaded a new configuration to be applied, then both the current and the new configuration will be modeled, however only the current configuration will be associated with the FCSwitch element. Once the new configuration is applied, it will no longer be modeled as a separate object from the current configuration.A configuration is uploaded to the switch by creating a new instance of CIM_ConfigurationData.

Limitations:

- The new configuration is stored in volatile memory. It will be deleted if the switch is reset before it is applied.
- There is no mechanism to pre-validate a configuration before applying it.
- The switch is automatically reset when a configuration is applied.

CreationTimeStamp

Property will contain the time the configuration was retrieved from the switch. This value is updated every time the configuration is enumerated.

ConfigurationInformation

This property contains the actual configuration data to be retrieved or restored. It is binary data stored as a Uint8 array.

ApplyConfiguration

Method will apply this configuration object as the current configuration on the switch, and reset the switch.

Parameters:

ValidateOnly: [required] Must be FALSE.

TypeOfConfiguration: [required] Must be 2 – Running/Current Configuration.

ManagedElement: [required] Must be the ObjectPath of a QLGC_FCSwitch instance associated to the “switch” RegisteredProfile object.

Returns:

- 0: Success
- 5: Invalid Parameter. One or more parameters do not conform to the parameter limitations above.
- 16000: Validate Only Request Not Supported; ValidateOnly must be FALSE
- 16001: ConfigurationData is invalid; Validation failure during while applying configuration.
- 16002: Element Does Not Support Initial/Default Configs; TypeOfConfiguration must be 2
- 16003: Element Does Not Support Possible Configs/Config; TypeOfConfiguration must be 2
- 16005: Element Cannot Be Configured; Probably the result of an invalid ManagemedElement parameter.

Request Status Codes:

- CIM_ERR_ACCESS_DENIED: User does not have authorization for this command, or another user is configuring the switch, retry later.
- CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.
- CIM_ERR_NOT_FOUND: The ConfigurationData instance was not found.

ElementName

Property will contain the string “Switch Configuration Image”

InstanceID

Opaque Identifier

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames
- createInstance
- invokeMethod

Associations

QLGC_FCSwitchConfigurationData : CIM_ElementSettingData

1to1 relationship to QLGC_FCSwitch

2 Fabric Discovery Classes

The CIMAgent is able to provide information about all the switches and ports in the fabric by querying the management server and name server on other switches in the fabric. If the management server is disabled or incompletely implemented on the remote switches, a truncated fabric will be reported. The following classes are described in the SMI-Specification 1.1.0 Fabric profile.

QLGC_SAN : CIM_AdminDomain

The SAN object aggregates multiple fabrics. This distribution supports a single fabric per switch, so there will be a one to one relationship between the sole SAN and Fabric objects.

Supported Properties and Methods

CreationClassName

Property will contain the string “QLGC_SAN”

Name

Property will contain the WWN of the principal switch in the fabric.

NameFormat

Property will contain the string “WWN”

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_ContainedDomain : CIM_ContainedDomain — 1to1 relationship to QLGC_Fabric

QLGC_Fabric : CIM_AdminDomain

This distribution supports a single fabric per switch, so there will be a one to one relationship between the sole SAN and Fabric objects.

Supported Properties and Methods

CreationClassName

Property will contain the string “QLGC_Fabric”

Name

Property will contain the WWN of the principal switch in the fabric.

NameFormat

Property will contain the string “WWN”

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_ContainedDomain : CIM_ContainedDomain — 1to1 relationship to QLGC_SAN
- QLGC_FabricConformsToProfile : CIM_ElementConformsToProfile — 1to1 relationship to QLGC_RegisteredProfile (RegisteredName=”Fabric”)
- QLGC_FabricFCNode : CIM_HostedCollection — 1toMany relationship to QLGC_FCNode
- QLGC_FabricFCPort : CIM_SystemDevice — 1toMany relationship to QLGC_FCPort
- QLGC_FabricFCSwitch : CIM_Component — 1toMany relationship to QLGC_FCSwitch
- QLGC_FabricLogicalNetwork : CIM_HostedCollection — 1to1 relationship to QLGC_LogicalNetwork
- QLGC_FabricProtocolEndPoint : CIM_HostedAccessPoint — 1toMany relationship to QLGC_ProtocolEndPoint
- QLGC_FabricZoneSet : CIM_HostedCollection — 1to1 relationship to QLGC_ZoneSet (Active=true)
- QLGC_FabricZone : CIM_HostedCollection — 1toMany relationship to QLGC_Zone (Active=true)

QLGC_FCNode : CIM_LogicalPortGroup

A host or storage device model will have an FCNode (possibly an HBA) that aggregates one or more FCPorts. A device may contain multiple FCNodes.

All FCNodes are hosted by the Fabric object as the switch is usually unable to determine valid information about the actual ComputerSystem hosting the nodes. Furthermore, while the switch will be able to determine an FCNode for every port reported by the name server, it will not be able to definitively identify every port attached to an FCNode.

Supported Properties and Methods

InstanceID

Opaque identifier

ElementName

Property will contain the node symbolic name as supplied by the attached device.

Name

Property will contain the node WWN.

NameFormat

Property will contain the string “WWN”

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FabricFCNode : CIM_HostedCollection — ManyTo1 relationship to QLGC_Fabric
- QLGC_MemberOfFCNode : CIM_MemberOfCollection — 1toMany relationship to QLGC_FCPort

QLGC_FCPort : CIM_FCPort

There are three distinct groups of FCPort objects:

Local Switch Ports

These are the ports that are attached to the switch that hosts the CIMAgent. Ports that are not licensed or not installed or, in the case of a blade about to be removed, powered off are not instantiated.

Remote Switch Ports

These are ports on other switches in the fabric. The CIMAgent is only able to report information about these ports that is exposed by the Fabric Configuration Service on the remote switch.

Switch ports are associated to an aggregating FCSwitch object.

NS Ports

These are device ports that have registered themselves with the name server when they logged into the fabric. The device may be linked with any switch in the fabric. NS ports will be associated with an aggregating FCNode object.

Supported Properties and Methods

CreationClassName

Property will contain the string “QLGC_FCPort”

DeviceID

Opaque identifier

SystemCreationClassName

- (Local/Remote) Property will contain the string “QLGC_FCSwitch”
- (NS)Property will contain the string “QLGC_Fabric”

SystemName

- (Local/Remote)Property will contain the switch WWN
- (NS) Property will contain the WWN of the principal switch in the fabric.

ElementName

Property will contain a user friendly string identifying the port. The property may be modified for ports local to the switch if the associated FCPortCapabilities.ElementNameEditSupported property is TRUE.

- (Local/Remote)“Port <portno>”
- (NS) Port Symbolic Name, if any was registered with Nameserver.

LinkTechnology

Property will contain the enumerated value 4=FC (FibreChannel)

NetworkAddresses

- (Local/Remote)Property will be NULL
- (NS)Property will contain the FibreChannel address identifier (FCID) formatted as 6 uppercase hex digits.

OperationalStatus

Operational Status is an array containing a single value as follows. It represents the operational status of the port, not the configured port settings. Supported values are:

(Local/Remote)

- 00-Unknown: Remote port state is unknown, and/or port is not installed.
- 02-OK: Port is ONLINE and passing traffic.
- 06-Error: Error trying to link to remote device or switch, or boot diagnostic error.
- 10-Stopped: Port is operationally OFFLINE as a result of either not being connected to anything, or as a result of being disabled (configured “OFFLINE” or “DOWN”).
- 11-InService: Port has been configured to a diagnostic state.

(NS)

- 0-Unknown

PermanentAddresses

Property will contain the port WWN.

PortType

Port Type represents the value negotiated during the port login procedure. It does not represent the configured port type. Supported values are:

- 00-Unknown: (Local/Remote) G/GL port is not linked, or data is unknown.
- 10-N: (NS) Node Port
- 11-NL: (NS) Node Port in FC-AL mode
- 14-E: (Local/Remote) Fabric Expansion port linked to another switch.
- 15-F: (Local/Remote) Fabric Port linked to an N port.
- 16-FL: (Local/Remote) Fabric Port linked to one or more NL ports via FC-AL.
- 16000-Donor (local) Port is in Donor Mode and is unusable

PortNumber

- (Local): Property will contain a value that matches the label on the switch. Port number is zero based.
- (Remote): Property will contain the “Physical Port Number” reported by the fabric configuration server on the remote switch. For all QLogic switches, this value will match the label on the switch, however the contents of “Physical Port Number” are officially undefined, and experience has shown that not all vendors use the same scheme for that field.
- (NS): Property will be NULL

Speed

- Property will contain the negotiated link speed for a switch port and NULL for a port on an attached device. Supported values are:
- (Local/Remote) 0: Unknown or port is not connected.
  - 1062500000: 1 Gbps
  - 2125000000: 2 Gbps
  - 4250000000: 4 Gbps
  - 12750000000: 10 Gbps (4 channel)
  - 8500000000: 8Gbps
  - 25500000000: 20Gbps
- (NS) 0: Unknown

MaxSpeed

Property will contain the maximum speed supported by a switch port and NULL for a port on an attached device. Supported values are:

(Local)

- 1062500000 1 Gbps
- 2125000000 2 Gbps
- 4250000000 4 Gbps
- 12750000000 10 Gbps (4 channel)
- 8500000000 8Gbps
- 25500000000 20Gbps

(Remote)

- 0 Unknown
- (NS) NULL

SupportedCOS

Property will contain an array of 0..N supported classes of service for a port on an attached device (NS port). It will be NULL for switch ports.

SupportedFC4Types

Property will contain an array of 0..N supported FC4 Types for a port on an attached device (NS port). It will be NULL for switch ports.

EnabledState

(Local)

Property will contain the current port enabled state. This value will match the configured switch enabled state (EnabledDefault) unless the switch state has been temporarily changed.

Supported values

- 02-Enabled - Port is enabled
- 03-Disabled - Port is disabled
- 07-InTest Port is in diagnostic mode

(NS/Remote) Property will contain the enumerated value 5=Not Applicable.

RequestedState

(Local)

Property will contain the value 5=No Change. All port state changes are atomic, so there will never be a pending requested state.

(NS/Remote)

Property will contain the enumerated value 12=Not Applicable

EnableDefault

(Local)

Property will contain the configured port state.

02-EnabledPort is enabled

03-DisabledPort is disabled

(NS/Remote)

Property will contain the enumerated value 5=Not Applicable.

RequestStateChange

(Local only)

Method will change the configured port state to the RequestedState value. If the RequestedState parameter is 11-Reset, the port will be reset, but the configured state will not change.

Parameters:

- RequestedState: [required] A port specific array of valid values may be found in the FCPortCapabilities.RequestedStatesSupported property. Parameter must be one of the following enumerated values.
  - 2-Enabled: Port is online.
  - 3-Disabled: Port is offline
  - 7-Test: Port is in diagnostics mode.
  - 11-Reset: Port will be reset.
- Job: Ignored, command is synchronous.
- TimeoutPeriod, must be zero second interval, or NULL, command is synchronous.

Method Returns:

- 0 - Success
- 1 - Not Supported: (NS/Remote Ports) Method applies to local ports only.
- 6 - In Use: Switch is being configured by another user;
- 4097 - Invalid State Transition: RequestedState parameter value is out of range.
- 4098 – Use of Timeout Parameter Not Supported

Request Status Codes:

- CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.
- CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.
- CIM_ERR_NOT_FOUND: The FCPort instance was not found.

QLogic Extended Properties and Methods

HealthState

(Local Only)

This property will report the diagnostic status of the port as a result of the Switch POST. Supported values are:

0 – Unknown Port is not installed

5 – OK No errors

25 – Critical Failure Port failed POST

IOStreamGuardState

(Local Only)

Property will contain an enumerated value representing the operational state of the port IOStreamGuard feature. The property is used to detect what state the port is using when the FCPortSettings.IOStreamGuard property has been set to 1-AutoDetect.

Supported values are:

- 2 - Enable: Suppresses the reception of RSCN messages from other ports for which I/O Stream Guard is enabled.
- 3 - Disable: Allows free transmission and reception of RSCN messages.

PerformanceTuningMode

(Local Only) Property will contain an enumerated value representing the operational tuning mode in use by the port, if any. The property is used to detect what mode the port is using when the FCPortSettings.PerformanceTuningMode property has been set to 1-AutoDetect.

Supported values are:

- 2 - None
- 3 – MFS: Multi-frame sequence interleaving is suppressed.
- 4 – VI: Enable support for VI frames.
- 5 – LCF: Preference routing for link control frames.
- 6 – VI-LCF: Both VI and LCF are enabled BBCredits

BBCredits

(Local Only) Property represents the number of (buffer to buffer) credits dedicated to the port.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FCPortStatisticalData : CIM_ElementStatisticalData
  — 1to1 relationship to QLGC_FCPortStatistics (Local only)
- QLGC_FCPortRateStatisticalData : CIM_ElementStatisticalData
  — 1to1 relationship to QLGC_FCPortRateStatistics (Local only)
- QLGC_DeviceSAPImplementation : CIM_DeviceSAPImplementation
  — 1to1 relationship to QLGC_PrototoclEndpoint (Online only)
- QLGC_FabricFCPort : CIM_SystemDevice
  — ManyTo1 relationship to QLGC_Fabric (NS Only)
- QLGC_FCSwitchFCPort : CIM_SystemDevice
  — ManyTo1 relationship to QLGC_FCSwitch (Local and Remote Only)
- QLGC_MemberOfFCNode : CIM_MemberOfCollection
  — ManyTo1 relationship to QLGC_FCNode (NS Only)
- QLGC_FCPortElementCapabilities : CIM_ElementCapabilities
  — 1to1 relationship to QLGC_FCPortCapabilities
- QLGC_FCPortElementSettingData : CIM_ElementSettingData
  — 1to1 relationship to QLGC_FCPortSettings
- QLGC_LogicalIOBladeFCPort : CIM_ModulePort
  — Manyto1 relationship to QLGC_LogicalIOBlade

QLGC_FCSwitch : CIM_ComputerSystem

The switch “System” is represented by an instance of FCSwitch. This class is required in both the fabric profile and the switch profile.

Supported Properties and Methods

CreationClassName

Property will contain the string “QLGC_FCSwitch”

Name

Property will contain the switch WWN.

ElementName

Property will contain the Switch Symbolic Name. The property may be edited if FCSwitchCapabilities.ElementNameEditSupported is TRUE.

NameFormat

Property will contain the string “WWN”.

OtherIdentifyingInfo

Property will contain an array with a single string element representing the domainID of the switch. The domainID is formatted as a decimal value.

OperationalStatus

Property will contain an array of enumerated values that represent both the configured state and the operational status of the switch. The zero position in the array will contain the one of the following exclusive values:

- 02-OK: All the switch ports have been enabled (ONLINE) and the switch passed boot diagnostic test.
- 03-Degraded: The switch is working but a fault has been detected.
- 06-Error: The switch is not working properly.
- 10-Stopped: All the switch ports have been disabled (OFFLINE or DOWN).
- 11-InService: All the switch ports have been placed into diagnostic mode.

Property may also contain a combination of the following values:

- 05-PredictiveFailure: A system failure is likely.
- 32768-FW_POST_FAIL: Power-On Self Test failure
- 32769-HW_MP_ACCESS: Failed to access eeprom on MP.

IdentifyingDescriptions

Property will contain an array with a single string value of “DomainID”. This corresponds with the OtherIdentifyingInfo property that contains the domainID of the switch.

Dedicated

Property will contain the enumerated value 5=Switch; identifying this instance of CIM_ComputerSystem as a Switch.

EnabledState

Property will contain the current port enabled state. This value will match the configured switch enabled state (EnabledDefault) unless the switch state has been temporarily changed.

Possible values are:

- 2-Enabled: Switch ports are online.
- 3-Disabled: Switch ports are offline
- 7-Test: Switch ports are in diagnostics mode.

RequestedState

Property will contain the pending switch state. Switch state changes are atomic so there will never be a pending switch state.

Possible values are:

05-NoChange - No Pending State Change

12-NA Switch may not be enabled/disabled (remote switch)

EnabledDefault

Property will contain the configured switch state.

Possible values are:

- 2-Enabled: Switch ports are online.
- 3-Disabled: Switch ports are offline.
- 5 - N/A Switch may not be enabled/disabled. (remote switch)

RequestStateChange

Method will change the configured switch state to the RequestedState value.

Parameters:

RequestedState: [required] A switch specific array of valid values may be found in the FCSwitchCapabilities.RequestedStatesSupported property.

Parameter must be one of the following enumerated values.

- 2-Enabled: Switch ports are online.
- 3-Disabled: Switch ports are offline
- 7-Test: Switch ports are in diagnostics mode.

- 11-Reset: Switch will perform a hard reset.
- Job: Ignored, command is synchronous.
- TimeoutPeriod, must be zero second interval, or NULL, command is synchronous.

Returns:

- 0 - Success
- 6 - In Use: Switch is being configured by another user.
- 4097 - Invalid State Transition: RequestedState parameter value is out of range.
- 4098 – Use of Timeout Parameter Not Supported

Request Status Codes:

- CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.
- CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.
- CIM_ERR_NOT_FOUND: The FCSwitch instance was not found.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames
- modifyInstance
- setProperty
- invokeMethod

Associations

- QLGC_FCSwitchObjectManager : CIM_HostedService
  — 1to1 relationship to QLGC_ObjectManager
- QLGC_FCSwitchConformsToProfile : CIM_ElementConformsToProfile
  — 1to1 relationship to QLGC_RegisteredProfile
- QLGC_FCSwitchConformsToSubProfile :
  CIM_ElementConformsToProfile
  — 1toMany relationship to QLGC_RegisteredSubProfile
  (RegisteredName=”Zone Control”, “Software”, “Enhanced Zoning and Enhanced Zoning Control”)
- QLGC_FCSwitchCIMXMLCommMechanism :
  CIM_HostedAccessPoint
  — 1to1 relationship to QLGC_CIMXMLCommunicationsMechanism

- QLGC_FCSwitchSoftware : CIM_InstalledSoftwareIdentity — 1to1 relationship to QLGC_SoftwareIdentity
- QLGC_FCSwitchPackage : CIM_ComputerSystemPackage — 1to1 relationship to QLGC_PhysicalChassis
- QLGC_FabricFCSwitch : CIM_Component — ManyTo1 relationship to QLGC_Fabric
- QLGC_FCSwitchFCPort : CIM_SystemDevice — 1toMany relationship to QLGC_FCPort
- QLGC_FCSwitchAccessPoint : CIM_HostedAccessPoint — 1toMany relationship to QLGC_RemoteServiceAccessPoint
- QLGC_SAPAvailableForFCSwitch : CIM_SAPAvailableForElement — 1toMany relationship to QLGC_RemoteServiceAccessPoint
- QLGC_FCSwitchProtocolEndPoint : CIM_HostedAccessPoint — 1toMany relationship to QLGC_ProtocolEndpoint
- QLGC_FCSwitchZoningService : CIM_HostedService — 1to1 relationship to QLGC_ZoningService
- QLGC_FCSwitchZoningCapabilities : CIM_ElementCapabilities — 1to1 relationship to QLGC_ZoningCapabilities
- QLGC_FCSwitchZoneSet : CIM_HostedCollection — 1toMany relationship to QLGC_ZoneSet
- QLGC_FCSwitchZone : CIM_HostedCollection — 1toMany relationship to QLGC_Zone
- QLGC_FCSwitchZoneAlias : CIM_HostedCollection — 1toMany relationship to QLGC_ZoneAlias
- QLGC_FCSwitchStatisticsCollection : CIM_HostedCollection — 1to1 relationship to QLGC_StatisticsCollection
- QLGC_FCSwitchElementSettingData : CIM_ElementSettingData — 1to1 relationship to QLGC_FCSwitchSettings
- QLGC_FCSwitchElementCapabilities : CIM_ElementCapabilities — 1to1 relationship to QLGC_FCSwitchCapabilities
- QLGC_FCSwitchPhysicalIOBlade : CIM_ComputerSystemPackage — 1toMany relationship to QLGC_PhysicalIOBlade
- QLGC_FCSwitchLogicalIOBlade : CIM_SystemDevice — 1to1 relationship to the local QLGC_FCSwitch instance.

QLGC_LogicalNetwork : CIM_ConnectivityCollection

This class is useful as a means to quickly access all the Fibre Channel specific instances of ProtocolEndpoint in the fabric.

Supported Properties and Methods

InstanceID
Opaque identifier

ElementName
Property will contain the WWN of the principal switch in the fabric.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FabricLogicalNetwork : CIM_HostedCollection — 1to1 relationship to QLGC_Fabric
- QLGC_MemberOfLogicalNetwork : CIM_MemberOfCollection — 1to1 relationship to QLGC_ProtocolEndPoint

QLGC_ProtocolEndpoint : CIM_ProtocolEndpoint

The two ends of a Fibre Channel link are represented by protocol endpoints associated together by an instance of ActiveConnection. Only FCPorts that are ONLINE will be associated with a protocol endpoint.

Supported Properties and Methods

CreationClassName

Property will contain the string “QLGC_ProtocolEndpoint”

Name

Opaque

SystemCreationClassName

- For all protocol end points associated with a switch port: Property will contain the string “QLGC_FCSwitch”
- For all protocol end points associated with an attached device: Property will contain the string “QLGC_Fabric”

SystemName

- For all protocol end points associated with a switch port: Property will contain the switch WWN
- For all protocol end points associated with an attached device: Property will contain the WWN of the principal switch in the fabric.

NameFormat

Property will contain the string “WWN”

ProtocolType

Property will contain the enumerated value 18=Fibre Channel. Property is deprecated.

ProtocolIFType

Property will contain the enumerated value 56=Fibre Channel.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_ActiveConnection : CIM_ActiveConnection — 1to1 relationship to QLGC_ProtocolEndpoint
- QLGC_DeviceSAPImplementation : CIM_DeviceSAPImplementation — 1to1 relationship to QLGC_FCPort (online ports only)
- QLGC_FabricProtocolEndPoint : CIM_HostedAccessPoint — ManyTo1 relationship to QLGC_Fabric (NS ports)
- QLGC_FCSwitchProtocolEndPoint : CIM_HostedAccessPoint — ManyTo1 relationship to QLGC_FCSwitch (switch ports)
- QLGC_MemberOfLogicalNetwork : CIM_MemberOfCollection — ManyTo1 relation to QLGC_LogicalNetwork

3 Fabric Zoning Classes

The following classes are described in the SMI-Specification 1.1.0 Fabric profile.

Zoning Discovery

The CIMAgent supports discovery of the Active Zoneset and the local Zoning Database. The active zoneset shows the zoning configuration that is currently being enforced by all switches in the fabric. The zoning database contains saved zonesets that may be edited and or activated.

Zoning Management

The CIMAgent supports modification to the inactive zoning database, and zoneset activation. The SMI-Specification 1.1.0 contains approved recipes for common zoning actions.

The CIMAgent does NOT support zoning sessions as defined in the SMI-Specification 1.1.0. The client should query the ZoneService.SessionState to determine if sessions are supported before attempting to start a session.

Management objects CIM_ZoneService, CIM_ZoneCapabilities, and all inactive zones, zonesets and zone aliases are associated with the switch (CIM_ComputerSystem) object rather than the Fabric (CIM_AdminDomain) object.

The vendor neutral steps for determining the CIM_System object to use for managing zoning are:

1. Locate the “Zone Control” sub profile (CIM_RegisteredSubProfile).If it is not found, zone control is not supported.
2. Follow the CIM_ElementConformsToProfile association to the CIM_System object that is associated with the inactive zoning objects and the ZoneService object. This will be either a switch (CIM_ComputerSystem) or a fabric (CIM_AdminDomain.).

The vendor neutral steps for determining the CIM_AdminDomain object associated with the Active zoneset are:

1. Locate the “Fabric” profile (CIM_RegisteredProfile).
2. Follow the CIM_ElementConformsToProfile association to the fabric CIM_AdminDomain object that will be associated with the active zoneset and zone objects.

Zoning Name Limits

The CIMAgent supports names for zones, zone aliases, and zoneset with the following character set: alphanumeric characters, “^”, “$”, “-”, and “_”. The maximum name length is 64 characters.

QLGC_ZoningCapabilities : CIM_ZoneCapabilities

There will be one instance of zoning capabilities associated to the switch (CIM_ComputerSystem) that is hosting the CIMAgent. In a multi-switch fabric, a client should use the lowest values returned from the capabilities reported by the separate providers to prevent the creation of a zoneset that will overwhelm an attached switch when activated.

Supported Properties and Methods

InstanceID

Opaque

MaxNumZone

Property will contain the maximum number of zones allowed in the zoning database.

MaxNumZoneAliases

Property will contain the maximum number of zone aliases in the zoning database.

MaxNumZoneMembers

Property will contain the maximum number of zone members allowed in the inactive zoning database. Note: While the CIMAgent reports duplicate zone members as a single instance of CIM_ZoneMembership, the switch zoning database will count them as multiple zone members, so this property more accurately reflects the maximum number of ZoneElementSettingData association instances allowed in the zoning database.

MaxNumZoneSets

Property will contain the maximum number of zonesets allowed in the zoning database.

MaxNumZonesPerZoneset

Property will contain the maximum number of zones that a zoneset may contain.

ZoneNameMaxLen

Property will contain the numeric value 64. This property is the maximum number of characters allowed in an alias, zoneset, or zone names.

ZoneNameFormat

Property will contain the enumerated value 3-AlphaNumeric. This property applies to the alias, zoneset, and zone names.

SupportedConnectivityMemberTypes

Property will contain the following array of enumerated values representing the types of zone members that may be added to a zone or alias.

- 2-Permanent Address
- 3-Network Address
- 4-Switch Port ID

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FCSwitchZoningCapabilities : CIM_ElementCapabilities — 1to1 relationship to QLGC_FCSwitch

QLGC_ZoningService : CIM_ZoneService

There will be one instance of zoning service associated to the switch (CIM_ComputerSystem) that is hosting the CIMAgent. The Zoning service is used for operations that create either a zone, zoneset, zone alias, zone member, or the association objects that link them together. Deletion of these objects may be done using intrinsic methods.

Supported Properties and Methods

SystemCreationClassName

Property will contain the string “QLGC_Switch”

CreationClassName

Property will contain the string “QLGC_ZoningService”

SystemName

Property will contain the switch WWN.

Name

Property will contain the switch WWN

RequestedSessionState

Property will contain the enumerated value 5=NotApplicable. Sessions are not supported.

OperationalStatus

Property will contain the enumerated value 2=OK

SessionState

Property will contain the enumerated value 5=No Change. Applicable. Sessions are not supported.

ActivateZoneSet

Method will attempt to activate the referenced zoneset, or to deactivate the active zoneset. Observable (via CIM) effects of activating a zoneset.

- Any zone or zoneset object currently marked as active are deleted.
- Zone members that had been associated with the deleted zones are deleted.
- A copy of the referenced zoneset object is created and marked as active.
- Copies of all zones that participate in the reference zoneset are created, marked as active and associated with new active zoneset object.
- Copies of all zone members that participate in the original zones (including expanded zone aliases) are created and associated with the the new zones.

Parameters:

- Zoneset: [required] Reference to Zoneset to activate or deactivate.
- Activate: [required] If true, activate referenced zoneset, otherwise deactivate zoneset.

Returns:

- 0 - Success
- 4 - Failed: Illegal zoneset, other fabric error.
- 5 - Invalid Parameter: Cannot activate the active zoneset object.
- 6 - Access Denied: Switch is being configured by another user.
- 7 – Not Found: Referenced zoneset was not found.

Request Status Codes:

- CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.
- CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.
- CIM_ERR_NOT_FOUND: The ZoningService instance was not found.

AddZone

Method will add a zone to a zoneset in the zoning database by creating an instance of association class MemberOfZoneSet linking the zone and zoneset together.

Parameters:

- ZoneSet: [required] Reference to the zoneset the zone will be added to.
- Zone: [required] Reference to the zone to be added to the zoneset.

Method Returns:

- 0 - Success
- 4 – Failed
- 5 – Invalid Parameter: May not configure Active zone or zoneset.
- 6 - Access Denied: Switch is being configured by another user.
- 7 – Not Found: Referenced zone or zoneset was not found.
- 8 – Already Exists: Zone is already a member of the zone set.

Request Status Codes:

- CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.
- CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.
- CIM_ERR_NOT_FOUND: The ZoningService instance was not found.

CreateZoneSet

Method will create a zoneset in the zoning database. The output parameter “ZoneSet” will contain a reference to the newly created zoneset object.

Parameters:

- ZoneSetName: [required] String naming the zoneset to be created. Must be unique within the zoning database.
- ZoneSet: [out] reference to the newly constructed ZoneSet object.

Returns:

- 0 - Success
- 4 - Failed
- 5 - Invalid Parameter: Invalid zoneset name
- 6 - Access Denied: Switch is being configured by another user.

Request Status Codes:

- CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.
- CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.
- CIM_ERR_NOT_FOUND: The ZoningService instance was not found.
- CIM_ERR_FAILED: If the response is an error message containing an instance of CIM_Error and CIM_Error.MessageID=FC5 – ZoningObject already exists
- The zoneset already exists. The path to the existing zoneset may be found in the CIM_Error.ErrorSource property.

CreateZone

Method will create a zone in the zoning database. The output parameter “Zone” will contain a reference to the newly created zone object.

Parameters:

- ZoneName: [required] Name of zone to be created. Must be unique within the zoning database.
- ZoneType: [required] Must contain the value 2=Default. (A soft zone is created)
- ZoneSubType: [optional] Ignored, subtype does not apply to default type.
- Zone: [out] Reference to the newly constructed Zone object.

Returns:

0 - Success

4 - Failed

5 - Invalid Parameter: Invalid zone name, or invalid zone type.

6 - Access Denied: Switch is being configured by another user.

Request Status Codes:

CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.

CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.

CIM_ERR_NOT_FOUND: The ZoningService instance was not found.

CIM_ERR_FAILED: If the response is an error message containing an instance of CIM_Error and CIM_Error.MessageID=FC5 – ZoningObject already exists

The zone already exists. The path to the existing zone may be found in the CIM_Error.ErrorSource property.

AddZoneAlias

Method will add a zone alias to a zone in the zoning database by creating an instance of association class MemberOfZone linking the alias and the zone together.

Parameters:

- Zone: [required] Reference to the zone the zonealias will be added to.
- ZoneAlias: [required] Reference to the zonealias to be added to the zone.

Returns:

0 - Success

4 - Failed

5 – Invalid Parameter: May not configure Active zone.

6 - Access Denied: Switch is being configured by another user.

7 - Not Found: Referenced zone or zone alias was not found.

8 - Already ExistsZone already contains referenced Alias.

Request Status Codes:

CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.

CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.

CIM_ERR_NOT_FOUND: The ZoningService instance was not found.

CreateZoneAlias

Method will create an alias in the zoning database. The output parameter “ZoneAlias” will contain a reference to the newly created alias.

Parameters:

CollectionAlias: [required] String containing a unique zone alias name.

ZoneAlias: [out] Reference to the newly created ZoneAlias object.

Returns:

0 - Success

4 - Failed

5 - Invalid Parameter: Invalid zone alias name.

6 - Access Denied: Switch is being configured by another user.

Request Status Codes:

CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.

CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.

CIM_ERR_NOT_FOUND: The ZoningService instance was not found.

CIM_ERR_FAILED: If the response is an error message containing an instance of CIM_Error and CIM_Error.MessageID=FC5 – ZoningObject already exists

The zone alias already exists. The path to the existing zone alias may be found in the CIM_Error.ErrorSource property.

AddZoneMembershipSettingData

Method will add a zone member to an alias or zone in the zoning database by creating an instance of association class CIM_ElementSettingData linking the zone member to the alias or zone. The zone member must already exist before this method is called.

Parameters:

- SystemSpecificCollection: [required] Reference to the zone or zone alias the zone member will be added to.
- ZoneMembershipSettingData: [required] Reference to the zone member to be added to the zone or zone alias.

Returns:

- 0 - Success
- 4 - Failed
- 5 – Invalid Parameter: May not configure Active zone.
- 6 - Access Denied: Switch is being configured by another user.
- 7 - Not Found: Referenced zone, zone alias or member was not found.
- 8 – Already Exists: Zone or alias already contains referenced zone member.

Request Status Codes:

- CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.
- CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.
- CIM_ERR_NOT_FOUND: The ZoningService instance was not found.

CreateZoneMembershipSettingData

Method will create a zone member and add it to an alias or zone in the zoning database. An instance of association class CIM_ElementSettingData linking the new zone member to the referenced parent object will also be created.

Note: This command will NOT fail if the zone member already exists as long as the member is not already part of the referenced zone or zone alias.

Parameters:

- ConnectivityMemberType[required] Enumerated type of zone member being created.
  - 2=Permanent Address (Device Port WWN)
  - 3=Network Address (Device Port FCID)
  - 4=SwitchPort ID (Switch Domain/Port)
- ConnectivityMemberID: [required] String identifying the zone member. The format is dependent on the ConnectivityMemberType.
  - MemberType: String Format/Example
    - PermanentAddress: 16 uppercase hex digits / 2100002037730526
    - Network Address: 6 uppercase hex digits / 0B04E4
    - SwitchPortID: D:P where D is the switch domain and P is the switch port (area). Both values are base10. / 3:122
- SystemSpecificCollection: [required] Reference to the zone or zone alias the zone member will be added to.
  - ZoneMembershipSettingData: [out] Reference to the newly created Zone member object.

Returns:

- 0 - Success
- 4 - Failed
- 5 - Invalid Parameter: Invalid ConnectivityMemberType or ConnectivityMemberID format.
- 6 - Access Denied: Switch is being configured by another user.
- 7 - Not Found: Referenced zone or alias or zone member was not found.

Request Status Codes:

- CIM_ERR_ACCESS_DENIED: User does not have authorization for this command.
- CIM_ERR_INVALID_PARAMETER: One or more required parameters are missing.
- CIM_ERR_NOT_FOUND: The ZoningService instance was not found.
- CIM_ERR_FAILED: If the response is an error message containing an instance of CIM_Error and CIM_Error.MessageID=FC5 – ZoningObject already exists
- The zone member already exists. The path to the existing zone member may be found in the CIM_Error.ErrorSource property.

DefaultZoningState

Property will contain an enumerated value representing the default zoning state, which indicates whether fabric members (devices) that are not in any active zone can access each other.

Supported values are:

- 2 – Allow: Unzoned devices can access each other.
- 3 – Deny: Unzoned devices are isolated.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames
- invokeMethod

Associations

- QLGC_FCSwitchZoningService : CIM_HostedService: 1to1 relationship to QLGC_FCSwitch

QLGC_ZoneSet : CIM_ZoneSet

A zoneset aggregates zones into a single logical unit. There may be one instance of zoneset marked as Active to represent the active zoneset associated with the fabric. All other instances of zoneset are stored in the zoning database on the switch.

Supported Properties and Methods

InstanceID

Opaque

Active

Property will contain a boolean value that will be TRUE if the zoneset object represents the active zoneset, or FALSE if the zoneset object represents an object from the inactive or local zoning database.

ElementName

Property will contain a user assigned string identifying the zoneset.

Supported WBEM Operations

- getClass
- getInstance
- deleteInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FabricZoneSet : CIM_HostedCollection: 1to1 relationship to QLGC_Fabric (Active = True)
- QLGC_FCSwitchZoneSet : CIM_HostedCollection: ManyTo1 relationship to QLGC_FCSwitch (Active = False)
- QLGC_MemberOfZoneSet : CIM_MemberOfCollection: 1ToMany relationship to QLGC_Zone

QLGC_Zone : CIM_Zone

A zone is a named group of ports or devices that can communicate with each other. Active zones will be associated with the fabric object, whereas inactive zones will be associated with the switch object.

Supported Properties and Methods

InstanceID

Opaque

Active

Property will contain a boolean value that will be TRUE if the zone object participates in the active zoneset, or false if the zone object is from the zoning database.

ElementName

Property will contain a user assigned string identifying the zoneset.

ZoneType

Property will contain an enumerated value describing the type of zone. Note: hard zones differ from soft zones in that hard zones affect the flow of FC frames whereas soft zones only affect a devices ability to see other devices in the fabric.

- 01-Other: Zone is an Access Control List Hard Zone
- 02-Default: Zone is a Soft Zone.

OtherZoneTypeDescription

If ZoneType is 01=Other, then this property will contain the string “HardACL” indicating that the zone is an Access Control List Hard Zone. Otherwise this property will contain an empty string.

Supported WBEM Operations

- getClass
- getInstance
- deleteInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FabricZone : CIM_HostedCollection — 1ToMany relationship ito QLGC_Fabric (Active = true)
- QLGC_FCSwitchZone : CIM_HostedCollection — 1ToMany relationship to QLGC_FCSwitch (Active = false)
- QLGC_MemberOfZoneSet : CIM_MemberOfCollection — ManyToMany relationship to QLGC_ZoneSet

- QLGC_MemberOfZone : CIM_MemberOfCollection — 1ToMany relationship to QLGC_ZoneAlias
- QLGC_ZoneElementSettingData : CIM_ElementSettingData — ManyToMany relationship to QLGC_ZoneMembership

QLGC_ZoneAlias : CIM_NamedAddressCollection

A zone alias is a collection of 1 or more related zone members which may be added to a zone in the zoning database. The active zoneset and zones won't contain any zone aliases. When a zoneset is activated any zone aliases are expanded into their component zone members.

Supported Properties and Methods

InstanceID

Opaque

CollectionAlias

Property will contain a user assigned string identifying the collection of zone members.

Supported WBEM Operations

- getClass
- getInstance
- deleteInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FCSwitchZoneAlias : CIM_HostedCollection — ManyTo1 relationship to QLGC_FCSwitch
- QLGC_MemberOfZone : CIM_MemberOfCollection — ManyTo1 relationship to QLGC_Zone
- QLGC_ZoneAliasElementSettingData : CIM_ElementSettingData — ManyToMany relationship to QLGC_ZoneMembership

QLGC_ZoneMembership : CIM_ZoneMembershipSettingData

A zone member represents either a device in the fabric, or a port on a switch. In the latter case, all devices connected to the port on the switch will participate in the zone.

Multiple zones (or zone aliases) may contain identical zone members, effectively identifying the same zoning element (port, device, etc.). In this case, only one instance of the zone member will be reported, however it will be associated with multiple zones (or zone aliases). The exception to this rule is that active zones will never be associated to inactive zone members, and vice versa.

Supported Properties and Methods

InstanceID

Opaque

ConnectivityMemberType

Property will contain the enumerated type of the zone member.

- 02-Permanent Address: Fabric Device Port WWN
- 03-Network Address: Fabric Device Port Fibre Channel address
- 04-Switch Port ID: Switch Domain / Port

ConnectivityMemberID

Property will contain a formatted string identifying the zone member. The format is dependent on the ConnectivityMemberType.

- MemberType: String Format/Example
  - Permanent Address: 16 uppercase hex digits / 2100002037730526
  - Network Address: 6 uppercase hex digits / 0B04E4
  - SwitchPort ID: D:P where D is the switch domain and P is the switch port (area). Both values are base10. / 3:122

Supported WBEM Operations

- getClass
- getInstance
- deleteInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_ZoneElementSettingData : CIM_ElementSettingData — ManyToMany relationship to QLGC_Zone
- QLGC_ZoneAliasElementSettingData : CIM_ElementSettingData — ManyToMany relationship to QLGC_ZoneAlias

4 Server Support Classes

The following classes are described in the SMI-Specification 1.1 server profile. These classes may be used to discover the capabilities of the CIMAgent. All profiles including the Server profile are implemented in the namespace: “root/switch” (firmware versions 7.*x* and 8.*x*) and “root/interop” (firmware version 9.*x*).

QLGC_Namespace : CIM_Namespace

There will be one instance of QLGC_Namespace representing the sole namespace supported by the CIMAgent.

Supported Properties and Methods

SystemCreationClassName

Property will contain the string “QLGC_FCSwitch”.

SystemName

Property will contain the switch WWN.

ObjectManagerCreationClassName

Property will contain the string “QLGC_ObjectManager”

ObjectManagerName

Opaque

CreationClassName

Property will contain the string “QLGC_Namespace”

Name

Property will contain the string ‘root/switch” for firmware versions 7.*x* and 8.*x*; “root/interop” for firmware version 9.*x*.

ClassInfo

Property will contain the enumerated value 11=CIM 2.8. This property is deprecated in the mof, but required for backward compatibility.

ClassType

Property will contain the enumerated value 2=CIM.

ClassTypeVersion

Property will contain the string “2.13.0”.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_NamespaceInManager : CIM_NamespaceInManager — 1To1 relationship to QLGC_ObjectManager

QLGC_ObjectManager : CIM_ObjectManager

There will be one instance of ObjectManager representing the CIMAgent.

Supported Properties and Methods

CreationClassName
Property will contain the string “QLGC_ObjectManager”

Name
Property will contain the switch WWN.

SystemCreationClassName
Property will contain the string “QLGC_FCSwitch”.

SystemName
Property will contain the switch WWN.

Description
Property will contain the string “Embedded CIMAgent”

ElementName
Property will contain the string “QLogic CIMAgent”, if the switch has been rebranded, then the property will contain a string with the format: “<brandname> CIMAgent”.

OperationalStatus
Property will contain the enumerated value 2=OK.

StatusDescriptions
Property will contain the string “OK”.

Started
Property will contain the value TRUE. If ObjectManager wasn't started, it wouldn't respond at all.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_FCSwitchObjectManager : CIM_HostedService — 1To1 relationship to QLGC_FCSwitch
- QLGC_NamespaceInManager : CIM_NamespaceInManager — 1To1 relationship to QLGC_Namespace
- QLGC_CIMXMLCommMechanismForManager : CIM_CommMechanismForManager — 1To1 relationship to QLGC_CIMXMLCommunicationMechanism
- QLGC_ManagerConformsToProfile : CIM_ElementConformsToProfile — 1To1 relationship to QLGC_RegisteredProfile

QLGC_CIMXMLCommunicationMechanism : CIM_CIMXMLCommunicationMechanism

The CIMAgent only supports the CIM over XML communications interface. There will be one instance of CIMXMLCommunicationsMechanism describing the capabilities of the interface implementation.

Supported Properties and Methods

CreationClassName

Property will contain the string “QLGC_CIMXMLCommunicationMechanism”

Name

Property will contain the string “CIMXML Communications Mechanism”.

SystemCreationClassName

Property will contain the string “QLGC_FCSwitch”.

SystemName

Property will contain the switch WWN.

CommunicationMechanism

Property will contain the enumerated value 2=CIM-XML

FunctionalProfilesSupported

Property will contain the following array of enumerated values:[2=basic_read, 3=basic_write, 5=instance_manipulation, 6=assoc_travel, 9=indications]

MultipleOperationsSupported

Property will contain the value FALSE. The CIMAgent doesn't support multiple operation requests.

AuthenticationMechanismsSupported

Property will contain the following array of enumerated values: [3=basic]. Enable SSL to encrypt login information.

Version

Property will contain the version string “1.1” representing the version of the CIM over XML specification implemented by the CIMAgent.

CIMValidated

Property will contain the value FALSE. XML parser does not validate against the DTD.

ElementName

Property will contain the string “CIMXML Communications Mechanism”

OperationalStatus

Property will contain the enumerated value 2=OK.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_CIMXMLCommMechanismForManager : CIM_CommMechanismForManager — 1To1 relationship to QLGC_ObjectManager
- QLGC_FCSwitchCIMXMLCommMechanism : CIM_HostedAccessPoint — 1To1 relationship to QLGC_FCSwitch

QLGC_RegisteredProfile : CIM_RegisteredProfile

There will be one instance of RegisteredProfile for each of the CIM profiles supported by the CIMAgent.

Supported Properties and Methods

InstanceID

Opaque

RegisteredOrganization

Property will contain enumerated value 11=SNIA

RegisteredName

Property will contain one of the following supported profile names “Fabric”, “Server”, and “Switch”.

RegisteredVersion

Property will contain the string profile version string “1.1.0”

AdvertiseTypes

Property will contain the following array of enumerated values. [3=SLP]

AdvertiseTypeDescriptions

Property will contain the following array of description strings. [“SLP”].

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_SubProfileRequiresProfile : CIM_SubProfileRequiresProfile — 1ToMany relationship to QLGC_RegisteredSubProfile.
- QLGC_FabricConformsToProfile : CIM_ElementConformsToProfile — 1To1 relationship to QLGC_Fabric (RegisteredName = “Fabric”)
- QLGC_FCSwitchConformsToProfile : CIM_ElementConformsToProfile — 1To1 relationship to QLGC_FCSwitch (RegisteredName = “Switch”)
- QLGC_ManagerConformsToProfile : CIM_ElementConformsToProfile — 1To1 relationship to QLGC_ObjectManager (RegisteredName = “Server”)
- QLGC_ProfileElementSoftwareIdentity : CIM_ElementSoftwareIdentity — ManyTo1 relationship to QLGC_SoftwareIdentity representing active software.

QLGC_RegisteredSubProfile : CIM_RegisteredSubProfile

There will be one instance of RegisteredSubProfile for each of the CIM sub-profiles supported by the CIMAgent.

Supported Properties and Methods

InstanceID

Opaque

RegisteredOrganization

Property will contain enumerated value 11=SNIA.

RegisteredName

Property will contain one of the following supported sub-profile names “Zone Control”, “Enhanced Zoning and Enhanced Zoning Control”, “Software”, and “Switch Configuration Data”, “Access Points”, “Location”, “Physical Package”, “Indications”, and “Blades”.

RegisteredVersion

Property will contain the string profile version string “1.1.0”

AdvertiseTypes

Property will contain the following array of enumerated values: [2=Not Advertised]. Subprofiles are not advertised.

AdvertiseTypeDescriptions

Property will contain the following array of description strings. [“Not Advertised”].

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Associations

- QLGC_SubProfileRequiresProfile : CIM_SubProfileRequiresProfile — ManyTo1 relationship to QLGC_RegisteredProfile
- QLGC_FCSwitchConformsToSubProfile : CIM_ElementConformsToProfile — ManyTo1 relationship to QLGC_FCSwitch.
- QLGC_SubProfileElementSoftwareIdentity : CIM_ElementSoftwareIdentity — ManyTo1 relationship to the QLGC_SoftwareIdentity representing the active firmware.

5 Indication Support Classes

The CIMAgent only supports all indications required by the SMI-Specification for the Switch and Fabric profiles. Indication Registration limitations are:

- 32 cimlisteners may be created
- 16 subscriptions per Listener
- HealthState Indications are not supported at this time, as the value reported is the result of the switch POST, and will not change during operation.

CIM_ListenerDestinationCIMXML

Supported Properties and Methods

SystemCreationClassName

Property may be left blank on creation, otherwise it will contain "QLGC_FCSwitch"

SystemName

Property may be left blank on creation, otherwise it will contain the WWN of the switch hosting the CIMAgent.

CreationClassName

Property must contain "CIM_ListenerDestinationCIMXML" on creation.

Name

Property must contain a unique identifier of length ranging from 1-64 characters.

PersistenceType

Supported values are:

- 2 - Permanent: The listener object will remain until manually deleted.
- 3 - Transient: If the agent is unable to send an indication for more than one hour due to connection failure, the listener object will be automatically removed. Note: A connection is only attempted in the event that an indication must be transmitted.

Destination

Property must contain a valid URI indicating the TCP address and port number of the listener. Host name lookup is not supported. The scheme must be either “http” or “https”.

Format: <scheme>_://<ipaddr or hostname_>:<portno>[/<extension>]

Examples:

- _http://10.0.0.1:12000 <http://10.0.0.1:12000/>_
- _https://10.0.0.1:12001/switchNotifications_
- _http://mylistener:12000 <http://mylistener:12000/>_
- _http://[FEDC:BA98:7654:3210:FEDC:BA98:7654:3210]:12000_

Associations

- CIM_IndicationSubscription — 1to1 relationship to CIM_IndicationFilter

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames
- createInstance
- deleteInstance

CIM_IndicationSubscription

The CIM_IndicationSubscription association is used to link an indication filter to an indication listener. If either of the filter and listener objects are deleted, all dependent subscription objects will also be deleted.

An indication subscription will only be active if the SubscriptionState is 2 (enabled) and it has not expired as a result of the SubscriptionDuration property. An inactive subscription will not pass filtered indications to the listeners.

Supported Properties and Methods

Filter

Property must contain a reference to an existing CIM_IndicationFilter object within the same local namespace.

Handler

Property must contain a reference to an existing CIM_ListenerDestinationCIMXML object within the same local namespace.

OnFatalErrorPolicay

This property is ignored on creation. Its value will always be 2 (Ignore). An indication will be dropped if the CIMAgent is unable to transmit it to the listener.

SubscriptionState

Supported Values are:

- 2 - Enabled
- 4 - Disabled

IndicationSubscriptions may not be "modified" via the CIM interface, so there is little point in creating a "Disabled" IndicationSubscription, as it may not be enabled.

SubscriptionStartTime

Field contains the time that the subscription was started, which will be the time that it was created.

SubscriptionDuration

Duration is the number of seconds after the SubscriptionStartTime before the subscription expires. Supported values range from 0 to 720000 seconds, where 0 indicates forever. An expired subscription will not be deleted.

SubscriptionTimeRemaining

This field is only reported if SubscriptionDuration is some value other than 0.

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames
- createInstance
- deleteInstance
- associators
- associatorNames
- references
- referenceNames

CIM_IndicationFilter

Indication filters are statically defined and may not be modified. There will be one each instance of CIM_IndicationFilter for the WQL and the CQL version of the supported requests.

Supported Properties and Methods

SystemCreationClassName

Property will contain "QLGC_FCSwitch"

SystemName

Property will contain the WWN of the switch hosting the CIMAgent.

CreationClassName

Property will contain "CIM_IndicationFilter"

Name

Property will contain a unique identifier that represents the intent of the Query property.

ElementName

A user-friendly name for the filter.

Query

Property will contain a predefined WQL statement indicating the type of events to look for.

QueryLanguage

Property will contain the string "WQL" or "CQL".

Associations

- CIM_IndicationSubscription — 1to1 relationship to CIM_CIMListenerDestinationCIMXML

Supported WBEM Operations

- getClass
- getInstance
- enumerateInstances
- enumerateInstanceNames

Predefined Filters

The CIMAgent supports the following pre-defined filters.

Create:ComputerSystem

WQL: SELECT * FROM CIM_InstCreation WHERE SourceInstance ISA CIM_ComputerSystem

CQL: SELECT * FROM CIM_InstCreation WHERE SourceInstance ISA CIM_ComputerSystem

An indication will be thrown whenever a switch is added to the fabric as seen by the switch hosting the CIMAgent. The embedded CIMAgent ignores fabric changes for the first 30 seconds after the switch is turned on or reset, as the internal fabric model is being initialized.

Delete:ComputerSystem

WQL: SELECT * FROM CIM_InstDeletion WHERE SourceInstance ISA CIM_ComputerSystem

CQL: SELECT * FROM CIM_InstDeletion WHERE SourceInstance ISA CIM_ComputerSystem

An indication will be thrown whenever a switch is removed from the fabric as seen by the switch hosting the CIMAgent.

Modify:ComputerSystem

WQL: SELECT * FROM CIM_InstModification WHERE SourceInstance ISA CIM_ComputerSystem AND SourceInstance.OperationalStatus <> PreviousInstance.OperationalStatus

CQL: SELECT * FROM CIM_InstModification WHERE SourceInstance ISA CIM_ComputerSystem AND SourceInstance.CIM_ComputerSystem::OperationalStatus <> PreviousInstance.CIM_ComputerSystem::OperationalStatus

An indication will be thrown whenever the operational status of the switch hosting the CIMAgent changes.

Create:FCPort

WQL: SELECT * FROM CIM_InstCreation WHERE SourceInstance ISA CIM_FCPort

CQL: SELECT * FROM CIM_InstCreation WHERE SourceInstance ISA CIM_FCPort

An indication will be thrown whenever a new device registers itself with the nameserver. Adding a new switch to the fabric will not cause the Create:FCPort indication for each of the new switch ports.

Delete:FCPort

WQL: SELECT * FROM CIM_InstDeletion WHERE SourceInstance ISA CIM_FCPort

CQL: SELECT * FROM CIM_InstDeletion WHERE SourceInstance ISA CIM_FCPort

An indication will be thrown whenever a device is removed from the nameserver. Removing a switch from the fabric will not cause a Delete:FCPort indication for each of the new switch ports, however it will cause Delete:FCPort indications for all the devices attached to the removed switch.

Note that the Fabric Segmentation results in the creation of a new Fabric for the isolated switches. The Delete:FCPort indication implies a device removal from the original fabric, not from the SAN as a whole, as the device will remain in the new fabric.

Modify:FCPort

WQL: SELECT * FROM CIM_InstModification WHERE SourceInstance ISA CIM_FCPort AND SourceInstance.OperationalStatus <> PreviousInstance.OperationalStatus

CQL: SELECT * FROM CIM_InstModification WHERE SourceInstance ISA CIM_FCPort AND SourceInstance.CIM_FCPort::OperationalStatus <> PreviousInstance.CIM_FCPort::OperationalStatus

An indication will be thrown whenever the operational status of a port on the switch hosting the CIMAgent changes.

Alert:ZoningDBChange

WQL: SELECT * FROM CIM_AlertIndication WHERE OwnerEntity=SNIA and MessageID='32'

CQL: SELECT * FROM CIM_AlertIndication WHERE OwnerEntity=SNIA and MessageID='32'

An indication will be thrown whenever the inactive zoning database changes. As the CIMAgent doesn't support zoning sessions, this means that a multi-step zoning change via CIM will result in multiple indications.

Alert:ActivateZoneSet

WQL: SELECT * FROM CIM_AlertIndication WHERE OwnerEntity=SNIA and MessageID='33'

CQL: SELECT * FROM CIM_AlertIndication WHERE OwnerEntity=SNIA and MessageID='33'

An indication will be thrown whenever a Zoneset is Activated.

Alert:All

CQL:SELECT * FROM CIM_AlertIndication

An indication will be thrown whenever any Alert occurs. This is not in itself an alert but rather a method for specifying a wildcard.

Alert:SNIA:Core1

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='Core1'

An indication will be thrown whenever a redundancy-related condition has occurred. This indication is caused by fan removal/failure, cpu removal/failure or power supply removal/failure.

Alert:SNIA:Core2

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='Core2'

An indication will be thrown whenever the switch has an environmental. These environment issues include over temperature, or high/low voltage.

Alert:SNIA:Core3

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='Core3'

An indication will be thrown based on hardware components being added or removed. Hardware component included in this indication are: fans added/removed, power supplies added/removed or cpus added/removed.

Alert:Core4

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='Core4'

An indication will be thrown whenever a user password has been changed.

Alert:Core5

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='Core5'

An indication will be thrown whenever a user account has been added or removed from the switch.

Alert:Core9

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='Core9'

An indication will be thrown whenever a failed login attempt occurs.

Alert:Core12

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='Core12'

An indication will be thrown whenever a port has changed status. The following port status changes are reported: unknown, other, Ok, Degraded, Stressed, Predictive, Failure, Error, Non-Recoverable Error, Starting.

Alert:FC1

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='FC1'

An indication will be thrown whenever the inactive zoning database changes. As the CIMAgent doesn't support zoning sessions, this means that a multi-step zoning change via CIM will result in multiple indications.

Alert:FC2

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='FC2'

An indication will be thrown whenever a Zoneset is Activated

Alert:FC5

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='FC5'

An indication will be thrown whenever the switch status has changed. Switch statuses represented in this indication are: Unknown, Ok, Stopped, In Service.

Alert:FC6

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='FC6'

An indication will be thrown whenever the fabric state has been changed status. Possible status changes are merged or segmented.

Alert:FC7

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='FC7'

An indication will be thrown whenever a switch has been added to the fabric.

Alert:FC8

CQL:SELECT * FROM CIM_AlertIndication WHERE OwningEntity=SNIA and MessageID='FC8'

An indication will be thrown whenever a switch has been removed from the fabric.

A Appendix

This Appendix describes the following SLP support, advertised profiles, state changes, limitations, HTTP operations, and Fibre Channel Transparent Mode (FC-T mode).

SLP Support

SLP (SA) support is integrated into the CIMAgent. As long as the switch is turned on and the CIM service is enabled, the CIMAgent will advertise its' presence and respond to requests for service. Ipv6 support was added as defined in RFC 3111. The SA will advertise it's presence via multicast on IPv4 and IPv6 as well as IPv4 broadcast.

Advertised Profiles

- Service
- Fabric
- Switch
- Record log

Sub profiles are not advertised via SLPLimitations

Limitations

- No support for SPI attribute in SrvRqst message. The CIMAgent will drop any request containing SPI information.
- No support for the Predicate attribute in the SrvRqst message. The attribute is ignored.
- The SrvTypeRqst is not supported. The CIMAgent will drop this request.

State Changes

In the event of an IP address change, or if SSL is enabled or disabled, the service advertisement will change. The CIMAgent will let all existing DA registrations expire, and re-register the new information with all known Discovery Agents (DA).

If the CIMAgent is disabled, or the switch is shut down; no SrvDeReg will be sent, instead the registration is expected to timeout.

The default registration timeout is 130 seconds. The DA may require a larger timeout which would then be used for that DA.

CIM Operations over HTTP

The following tables describe the CIM operation over HTTP.

Table A-1. Connecting to the Switch

Parameter	Description
Namespace	root/switch (firmware version 7.*x*, 8.*x*) root/interop (firmware version 9.*x*)
User	<same as telnet login>
Password	<same as telnet login>
Port	5988 (SSL Disabled), or 5989 (SSL Enabled)

If SSL is enabled on the switch, the CIMAgent will not accept connections to port 5988. User accounts may be added using Telnet or the Enterprise Fabric Manager.

Table A-2. IP Support

Parameter	Description
Supported Versions	IPv4, IPv6
Ipsec	Supported on both IPv4 and IPv6 stacks

Table A-3. HTTP Support

Parameter	Description
Supported Versions	HTTP 1.0 and HTTP 1.1
Supported Character Sets	utf-8
Supported Languages	en-us
Authentication	Basic (Digest authentication is NOT supported)
Chunking	Supported
Pipelining	Supported
Max Client Connections	8

All requests are handled serially in order of receipt. Parallel processing of requests is not supported.

Table A-4. CIM/XML Support

Parameter	Description
Supported Versions	1.0
Multiple Operations	Not Supported
CIMValidation	Loose
CIMSupportedQueryLanguages	None

Fibre Channel Transparent Mode

A switch in Fibre Channel Transparent Mode (FC-T mode) acts as a transparent pass-thru device linking multiple hosts to a limited number of fabric ports.

Profile Changes

The Fabric profile was removed and the switch profile is only implemented as a placeholder for the System object, as the device is no longer a Fibre Channel switch when it is in FC-T mode.

Class Changes

New Classes

QLGC_PassThroughMapEntry

Modified Classes

- QLGC_FCPortCapabilities
- QLGC_FCPortSettingData
- QLGC_FCPort
- QLGC_FCSwitch
- QLGC_RegisteredProfile
- QLGC_RegisteredSubProfile

Removed Classes

- QLGC_SAN
- QLGC_ContainedDomain
- QLGC_Fabric
- QLGC_FCNode
- QLGC_ProtocolEndPoint
- QLGC_ZoningCapabilities
- QLGC_ZoningService
- QLGC_Zoneset
- QLGC_Zone
- QLGC_ZoneAlias
- QLGC_ZoneMembership

QLGC_FCSwitch : CIM_ComputerSystem

FC-Switch specific properties have been removed in FC-T mode.

Redefined Properties and Methods

Dedicated

Property will contain an array with the single enumerated value 2-Other.

OtherDedicatedDescriptions

Property will contain an array with the single string value "FC-T Switch"

IdentifyingDescriptions

Property will be NULL.

Description

Property will contain the string "FC-T Switch"

OtherIdentifyingInfo

Property will be NULL.

QLGC_FCPortSettings : CIM_FCPortSettings

Only translated port types (TH and TF) are supported in FC-T mode.

Redefined Properties and Methods

RequestedType

Property will contain the configured port type. The active port type is reported in the FCPort.PortType property. Valid values for this property are reported by the RequestedTypesSupported property of the corresponding FCPortCapabilities instance. The possible values are:

- 16001-TH: Port is a translated host port, attached to a host device.
- 16002-TF: Port is a translated fabric port, attached to the fabric.

QLGC_FCPortCapabilities : CIM_FCPortCapabilities

Only translated port types (TH and TF) are supported in FC-T mode.

Redefined Properties and Methods

RequestedTypesSupported

Property will contain an array of one or more acceptable values for the FCPortConfig.RequestedType property. The possible values are:

- 16001-TH: Port may act as a translated host port.
- 16002-TF: Port may act as a translated fabric port.

QLGC_FCPort : CIM_FCPort

Only translated port types (TH and TF) are supported in FC-T mode.

Redefined Properties and Methods

PortType

Port Type represents the value negotiated during the port login procedure. It does not represent the configured port type. The supported values are:

- 00-Unknown: Port is not linked, or data is unknown.
- 16001-TH: Translated Host port
- 16002-TF: Translated Fabric Port

QLGC_PassThroughMapEntry : CIM_Dependency

This class is used to map (or report on a mapping) from a TH port to a TF port. Use intrinsic methods CreateInstance and DeleteInstance to create and delete mapping entries. There will be as many as one primary mapping and one secondary mapping associated to each TH port on the switch.

Antecedent

Property will contain a reference to a TH FCPort connected to a host.

Dependent

Property will contain a reference to a TF FCPort connected to the fabric.

PrimaryMapping

Property will contain a boolean indicating if this is the primary mapping between a TH port and it's TF port, or a secondary mapping to be used if the primary TF port is down.

QLGC_RegisteredProfile : CIM_RegisteredProfile

Fabric profile is removed in FC-T mode.

Redefined Properties and Methods

RegisteredName

Property will contain one of the following supported profile names: “Server”, and “Switch”.

QLGC_RegisteredSubProfile : CIM_RegisteredSubProfile

Fabric SubProfiles have been removed in FC-T mode.

Redefined Properties and Methods

RegisteredName

Property will contain one of the following supported sub-profile names: “Software”, “Switch Configuration Data”, “Access Points”, “Location”, “Physical Package”, and “Indications”.

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